This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.004 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 *et seq.*

1.	Facility Name and Mailing Address:	Lightfoot Elementary School WWTP 200 Dailey Drive Orange, VA 22960	SIC Code :	4952 WWTP
	Facility Location:	11360 Zachary Taylor Highway Unionville, VA 22567	County:	Orange
	Facility Contact Name:	Doug Arnold	Telephone Number:	540-661-4550
	Facility E-mail Address:	darnold@ocss-va.org		
2.	Permit No.:	VA0062961	Expiration Date of previous permit:	September 7, 2014
	Other VPDES Permits associated with this facility:		None	
	Other Permits associated with this facility:		None	
	E2/E3/E4 Status:	Not Applicable		
3.	Owner Name:	Orange County School Board		
	Owner Contact/Title:	Dr. Brenda Tanner/Superintendent	Telephone Number:	540-661-4550
	Owner E-mail Address:	btanner@ocss-va.org		
4.	Application Complete Date:	December 18, 2013		
	Permit Drafted By:	Joan C. Crowther	Date Drafted:	12/19/14
	Draft Permit Reviewed By:	Doug Frasier	Date Reviewed:	1/12/15
	Draft Permit Reviewed By:	Alison Thompson	Date Reviewed:	1/21/15
	Public Comment Period :	Start Date: 2/12/15	End Date:	3/16/15

5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination

Receiving Stream Name :	Riga Run, UT	Stream Code:	8-XDI
Drainage Area at Outfall:	0.74 sq.mi.	River Mile:	0.17
Stream Basin:	York River	Subbasin:	None
Section:	3	Stream Class:	III
Special Standards:	None	Waterbody ID:	VAN-F07R
7Q10 Low Flow:	0.0 MGD	7Q10 High Flow:	0.0 MGD
1Q10 Low Flow:	0.0 MGD	1Q10 High Flow:	0.0 MGD
30Q10 Low Flow:	0.0 MGD	30Q10 High Flow:	0.0 MGD
Harmonic Mean Flow:	0.0 MGD	30Q5 Flow:	0.0 MGD

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

X	State Water Control Law	X	EPA Guidelines
X	Clean Water Act	X	Water Quality Standards
X	VPDES Permit Regulation		Other
X	EPA NPDES Regulation		

7. Licensed Operator Requirements: Class IV

8. Reliability Class: Class II

9. Permit Characterization:

	Private		Effluent Limited		Possible Interstate Effect
	Federal	X	Water Quality Limited		Compliance Schedule Required
	State		Whole Effluent Toxicity Program Required		Interim Limits in Permit
X	POTW		Pretreatment Program Required		Interim Limits in Other Document
X	TMDL	X	e-DMR Participant		

10. Wastewater Sources and Treatment Description:

The wastewater treatment plant consists of a grease trap, 2 in-line septic tanks (1- 4,000 gallon and 1-1,000 gallon) and pump station with 2 submersible pumps. The wastewater then flows through a bar screen, into a 2,000 gallon extended aeration basin, secondary clarifier, tablet chlorination, tablet dechlorination, and diffuse post aeration.

Below is a facility schematic/diagram.

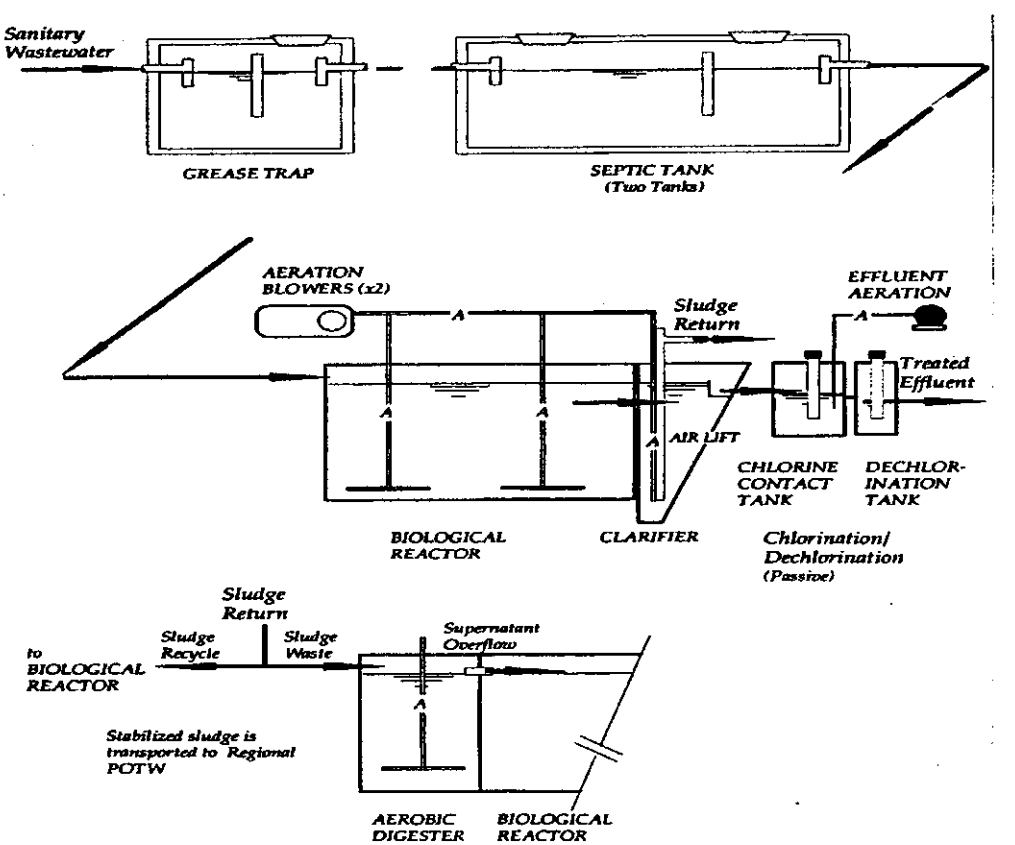
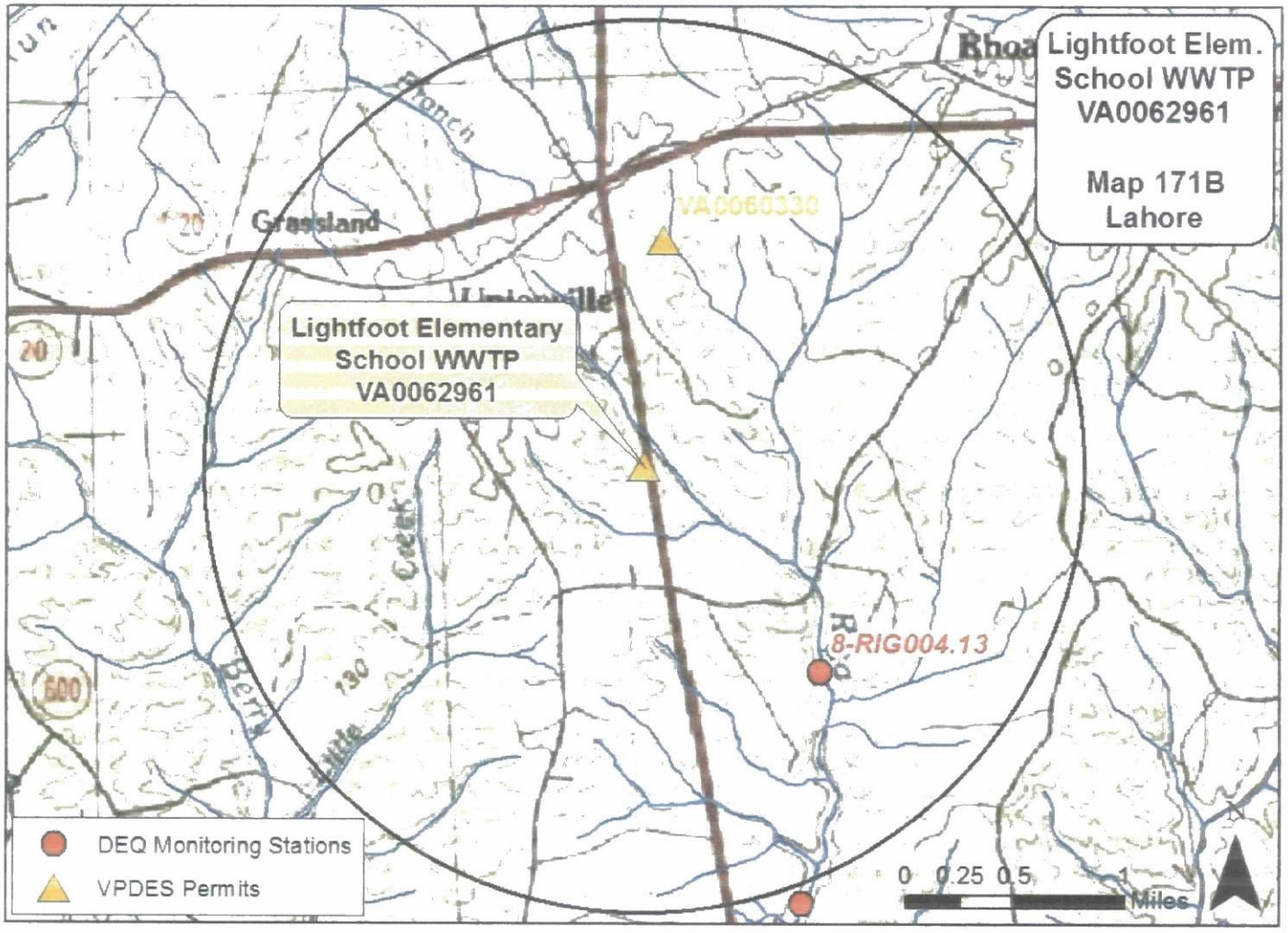


TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Design Flow	Outfall Latitude and Longitude
001	Domestic Wastewater	See Item 10 above.	0.004 MGD	38° 14' 51" N 77° 57' 12" W

USGS Topographic Map – Lahore; DEQ Map Number – 171B



11. Sludge Treatment and Disposal Methods:

The aerobic digested sludge is pumped and hauled by an independent contractor to the Massaponax Wastewater Treatment Plant (VA0025658) in Spotsylvania County, Virginia for disposal.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

TABLE 2 – VPDES Permitted Discharges and DEQ Monitoring Stations within 2 Miles of the Discharge	
VA0060330	Unionville Elementary School WWTP
8-RIG004.13	Riga Run, Probabilistic Monitoring Station for 2011, located ~0.4 rivermiles downstream from RT 650.

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Chlorine Tablets	2 – 5 gallon buckets	Stored in covered container in locked storage building
Dechlorination Tablets	2 – 5 gallon buckets	Stored in covered container in locked storage building.
Soda Ash	½ 50 lb. Bag	Stored in covered container in locked storage building.

14. Site Inspection:

Performed by Terry Nelson, DEQ Water Compliance Inspector, on April 14, 2009 (see Attachment 2).

15. Receiving Stream Water Quality and Water Quality Standards:

a. Ambient Water Quality Data

This facility discharges into an unnamed tributary to Riga Run. This unnamed tributary has not been monitored or assessed by DEQ. There is a DEQ monitoring station (8-RIG004.52) located on Riga Run, approximately 1.1 miles downstream of Outfall 001 at the Route 650 bridge crossing. However, the majority of the samples were collected at this station in the 1999-2000 timeframe, with the last station visit in 2006. The water quality summary for Riga Run is presented at the end of this section. The nearest downstream DEQ ambient monitoring station with recent data is 8-TRY004.98 on Terrys Run, located at the Route 629 bridge crossing, approximately 6.1 miles downstream of Outfall 001. The following is the water quality summary for this segment of Terrys Run, as taken from the 2012 Integrated Report:

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. Additionally, excursions above the fish tissue value (TV) of 300 parts per billion (ppb) for mercury (Hg) in fish tissue were recorded in tissue from one species (bluegill sunfish) of fish sampled in 2006 (two total excursions) at monitoring station 8-TRY004.98, noted by an observed effect.

There was no new E. coli monitoring for the 2012 assessment. The bacteria impairment listed in the 2010 assessment will be carried forward. A bacteria TMDL for the Terrys Run watershed has been completed and approved. The aquatic life and wildlife uses are considered fully supporting.

The following is the water quality summary for Riga Run, as taken from the 2012 Integrated Report. The DEQ monitoring stations located in this segment of Riga Run are 1)Ambient monitoring station 8-RIG004.52, at Route 650, and 2)Freshwater probabilistic monitoring station 8-RIG003.01, 1.5 rivermiles downstream of Route 650.

The aquatic life, wildlife, and fish consumption uses are considered fully supporting. The recreation use was not assessed.

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 4							
Waterbody Name	**Impaired Use**	**Cause**	**Distance From Outfall**	**TMDL completed**	**WLA**	**Basis for WLA**	**TMDL Schedule**
Impairment Information in the 2012 Integrated Report							
Terrys Run	Recreation	*E. coli*	5.8 miles	York River Basin (Lake Anna Tribs) Bacteria 11/04/05	6.98E+09 cfu/year *E. coli*	126 cfu/100ml *E. coli* --- 0.004 MGD	N/A
	Fish Consumption	PCBs		N/A	---	---	2018

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2012 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality

Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins, as well as by major source categories [wastewater, urban storm water, onsite/septic agriculture, air deposition]. Fact Sheet Section 17.e provides additional information on specific nutrient monitoring for this facility to implement the provisions of the Chesapeake Bay TMDL.

The planning statement is found in Attachment 3.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Riga Run, UT is located within Section 3 of the York River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

The Freshwater Water Quality/Wasteload Allocation Analysis (Attachment 4) details other water quality criteria applicable to the receiving stream.

Some Water Quality Criteria are dependent on the temperature and pH and Total Hardness of the stream and final effluent. The stream and final effluent values used as part of Attachment 5 are as follows:

pH and Temperature for Ammonia Criteria:
The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. Since the effluent may have an impact on the instream values, the temperature and pH values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream.

The 7Q10, 1Q10, and 30Q10 of the receiving stream are 0.0 MGD. In cases such as this, effluent pH and temperature data may be used to establish the ammonia water quality criteria. See Attachment 5 for the derivation of the 90th percentile values of the effluent pH and temperature data from August 2010 to August 2014.

Total Hardness for Hardness-Dependent Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's total hardness (expressed as mg/L calcium carbonate) as well as the total hardness of the final effluent.

There is no hardness data for this facility and receiving stream. Staff guidance suggests using a default hardness value of 50 mg/L CaCO3 for streams east of the Blue Ridge.

Bacteria Criteria:
The Virginia Water Quality Standards at 9VAC25-260-170A state that the following criteria shall apply to protect primary recreational uses in surface waters:

> *E. coli* bacteria per 100 ml of water shall not exceed a monthly geometric mean of 126 n/100 ml for a minimum of four weekly samples taken during any calendar month.

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Riga Run, UT, is located within Section 3 of the York River Basin. There are no special standards designed for this section in the Water Quality Standards.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on an evaluation that the critical flows for the stream are zero and at times the stream flow is comprised of only effluent. It is staff's best professional judgment that such streams are Tier 1. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a. Effluent Screening:
Effluent data obtained from the monthly DMRs from July 2009 through August 2014 has been reviewed and determined to be suitable for evaluation. The following exceedances were noted:

Ammonia as N – January 2010; January 2011; and December 2011;
E.coli – June 2013; and
Total Suspended Solids – September 2013.

The following pollutants require a wasteload allocation analysis: Total Residual Chlorine and Ammonia as N.

b. Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{Co[Qe + (f)(Qs)] - [(Cs)(f)(Qs)]}{Qe}$$

Where:
- WLA = Wasteload allocation
- Co = In-stream water quality criteria
- Qe = Design flow
- Qs = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- Cs = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the Co.

c. Effluent Limitations Toxic Pollutants, Outfall 001 –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

During the 1999 permit reissuance, the discharge for this facility was reclassified as intermittent, as the facility does not regularly discharge; therefore, the ammonia wasteload allocation and effluent limitation were calculated using the acute criteria only. A 90th percentile pH value of 7.8 SU and 90th percentile temperature value of 21°C were used. These 90th percentile values were taken from the 1999 permit reissuance evaluation. However, the pH and temperature documentation could not be found. The ammonia permit limitations based on this evaluation indicated that water quality standards would be meet at 7.8 mg/L (Attachment 6).

Staff reevaluated effluent pH and temperature values using the daily effluent values submitted on the monthly DMRs from August 2010 through August 2014. Using the pH (7.8 SU) and temperature (21°C) 90th percentiles, ammonia effluent limitation were calculated and resulted in an average monthly concentration and weekly maximum concentration of 12.1 mg/L. Ammonia calculation can be found in Attachment 7. The pH and temperature data can be found in Attachment 5.

Because the facility has shown that it can be operated to meet the 7.8 mg/L, existing ammonia limitations are proposed to be carried forwarded in this permit reissuance.

DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage.

NOTE: The Environmental Protection Agency (EPA) finalized new, more stringent ammonia criteria in August 2013; possibly resulting in significant reductions in ammonia effluent limitations. It is staff's best professional judgment that incorporation of these criteria into the Virginia Water Quality Standards is forthcoming. This and many other facilities may be required to comply with new criteria during their next permit term.

2) Total Residual Chlorine:

Chlorine is used for disinfection and is potentially in the discharge. Staff calculated WLAs for TRC using current critical flows and the mixing allowance. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits. A monthly average of 0.008 mg/L and a weekly average limit of 0.010 mg/L are proposed for this discharge (see Attachment 8).

3) Metals/Organics:

No metals or organics data were available for review; therefore, no effluent limits are proposed.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD_5), total suspended solids (TSS), *E.coli*, and pH limitations are proposed.

Dissolved Oxygen and BOD_5 are based on the stream modeling. The previous three permit reissuance fact sheets stated the stream model could not be located. Since the existing BOD_5 and dissolved oxygen effluent limitations have not caused degradation to the receiving stream, it is staff's best professional judgment that these limitations will continue to protect the receiving stream's water quality.

It is staff's practice to equate the Total Suspended Solids limits with the BOD_5 limits. TSS limits are established to equal BOD_5 limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.
E. coli limitations are in accordance with the Water Quality Standards 9VAC25-260-170.

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients
Nonsignificant dischargers are subject to aggregate wasteload allocations for Total Nitrogen (TN), Total Phosphorus (TP), and Sediments under the Total Maximum Daily Load (TMDL) for the Chesapeake Bay. Monitoring for TN, TP and TSS is required in order to verify the aggregate wasteload allocations.

f. Effluent Limitations and Monitoring Summary:

The effluent limitations are presented in the following table. Limits were established for BOD_5, Total Suspended Solids, Ammonia as N, pH, Dissolved Oxygen, and Total Residual Chlorine.

The limit for Total Suspended Solids is based on Best Professional Judgment.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the 2014 VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD_5 and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:
All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements
Design flow is 0.004 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/D	Estimate
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
BOD_5	2, 3	24 mg/L 0.40 kg/day	36 mg/L 0.60 kg/day	NA	NA	1/M	Grab
Total Suspended Solids (TSS)	2	24 mg/L 0.40 kg/day	36 mg/L 0.60 kg/day	NA	NA	1/M	Grab
Dissolved Oxygen (DO)	2,3	NA	NA	5.0 mg/L	NA	1/D	Grab
Ammonia, as N (mg/L)	3	7.8 mg/L	7.8 mg/L	NA	NA	1/M	Grab
E. coli (Geometric Mean)[d,e]	3	126 n/100 ml	NA	NA	NA	1/W	Grab
Total Residual Chlorine (after contact tank)	2, 3, 4	NA	NA	1.0 mg/L	NA	1/D	Grab
Total Residual Chlorine (after dechlorination)	3	0.008 mg/L	0.010 mg/L	NA	NA	1/D	Grab
Nitrate+Nitrite, as N	5	NL mg/L	NA	NA	NA	1/YR	Grab
Total Nitrogen [a,c]	5	NL mg/L	NA	NA	NA	1/YR	Calculated
Total Kjeldahl Nitrogen (TKN)	5	NL mg/L	NA	NA	NA	1/YR	Grab
Total Phosphorus[b]	5	NL mg/L	NA	NA	NA	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Guidance Memo No. 14-2011 –Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.

1/D = Once every day.
1/M = Once every month.
1/W = Once every week.
1/YR = Once every calendar year.

Grab = An individual sample collected over a period of time not to exceed 15 minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite.
b. For Total Phosphorus, all daily concentration data below the quantification level (QL) for the analytical method used shall be treated as half the QL. All daily concentration data equal to or above the QL for the analytical method used shall be treated as it is reported.

c. For Total Nitrogen (TN), if none of the daily concentration data for the respective species (i.e., TKN, Nitrates/Nitrites) are equal to or above the QL for the respective analytical methods used, the daily TN concentration value reported shall equal one half of the largest QL used for the respective species. If one of the data is equal to or above the QL, the daily TN concentration value shall be treated as that data point is reported. If more than one of the data is above the QL, the daily TN concentration value shall equal the sum of the data points as reported.
d. Samples shall be collected between 10:00 a.m. and 4:00 p.m.
e. The permittee shall sample and submit E. coli results at the frequency of once every week for three (3) months. If all reported results for E. coli do not exceed 126 n/100mL, reported as the geometric mean, the permittee may submit a written request to DEQ-NRO for a reduction in the sampling frequency to once per quarter.
Upon approval, the permittee shall collect four (4) samples during one month within each quarterly monitoring period as defined below. The results shall be reported as the geometric mean. The quarterly monitoring periods shall be January through March, April through June, July through September and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.
Should any of the quarterly monitoring results for E. coli exceed 126 n/100mL, reported as the geometric mean, the monitoring frequency shall revert to once per week for the remainder of the permit term.

20. Other Permit Requirements:

Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.

These additional chlorine requirements are necessary per the Sewage Collection and Treatment Regulations at 9VAC25-790 and by the Water Quality Standards at 9VAC25-260-170. A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

21. Other Special Conditions:

a. **95% Capacity Reopener.** The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.

b. **O&M Manual Requirement.** Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

c. **CTC, CTO Requirement.** The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

d. **Licensed Operator Requirement.** The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class IV operator.

e. **Reliability Class.** The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of II.

f. **Sludge Reopener.** The VPDES Permit Regulation at 9VAC25-31-220.C requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable

standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.

g. **Sludge Use and Disposal.** The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

h. **Water Quality Criteria Reopener.** The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

i. **TMDL Reopener.** This special condition is to allow the permit to be reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

22. Permit Section Part II.

Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a. Special Conditions:
The following special condition was removed from this permit reissuance:
1) Treatment Works Closure Plan – this facility serves only the elementary school so this special condition is not applicable.

b. Monitoring and Effluent Limitations:
1) Monitoring for TN, TP, Total Kjeldahl Nitrogen, and Nitrate+Nitrite has been added to the permit in accordance with Guidance Memo No. 14-2011 –Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed.

24. Variances/Alternate Limits or Conditions:

This permit contains no variances/alternate limits or conditions.

25. Public Notice Information:

First Public Notice Date: 2/12/15 Second Public Notice Date: 2/19/15

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3925, joan.crowther@deq.virginia.gov. See Attachment 9 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. Additional Comments:

Previous Board Action(s): None.

Staff Comments: None.

Public Comment: No comments were received during the public notice.

Lightfoot Elementary School Wastewater Treatment Plant
Fact Sheet Attachments

Attachment	Description
1	Flow Frequency Memo dated August 24, 1998
2	Site Inspection Report conducted on April 14, 2009, by Terry Nelson, DEQ-NRO Water
3	Planning Statement for Lightfoot Elementary School WWTP, dated October 22, 2014
4	Freshwater Water Quality Criteria/ Wasteload Allocated Analysis
5	Effluent pH and Temperature data August 2010 through August 2014
6	1999 Ammonia Permit Limitation Calculations
7	2014 Ammonia Effluent Calculation
8	Total Chlorine Residual Calculation
9	Public Notice

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination
Lightfoot Elementary School STP - VA#0062961

TO: James A. Olson, NRO

FROM: Paul E. Herman, P.E., WQAP

DATE: August 24, 1998

COPIES: Ron Gregory, Charles Martin, File

This memo supercedes my September 30, 1993 memo to Joa Crowther concerning the subject VPDES permit.

The Lightfoot Elementary School STP discharges to an unnamed tributary to Riga Run near Unionville, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

The discharge enters a dry ditch and travels about 500 feet to the unnamed tributary (UT). The UT appears as a perennial stream on the USGS Lahore Quadrangle topographic map. The flow frequencies for a dry ditch are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high floq 7Q10, and harmonic mean. The flow frequencies for the UT at a point just above its confluence with the dry ditch have been determined for your use in modeling the discharge.

The USGS and VDEQ operated a continuous record gage on the Bunch Creek near Boswells Tavern, VA (#01671500) from 1948 to 1979. The gage was located at the U.S. Route 15 bridge in Louisa County, VA. The flow frequencies for the gage and the discharge point are presented below. The values at the discharge point were determined by drainage area proportions and do not address any withdrawals, discharges, or springs lying upstream.

Bunch Creek near Boswells Tavern, VA (#01671500):

Drainage Area = 4.37 mi^2

1Q10 = 0.0 cfs	High Flow 1Q10 = 0.47 cfs
7Q10 = 0.0 cfs	High Flow 7Q10 = 0.60 cfs
30Q5 = 0.0 cfs	HM = 0.0 cfs

Attachment 1

UT to Riga Run above Lightfoot ditch:

Drainage Area = 0.74 mi^2

1Q10 = 0.0 cfs	High Flow 1Q10 = 0.08 cfs
7Q10 = 0.0 cfs	High Flow 7Q10 = 0.10 cfs
30Q5 = 0.0 cfs	HM = 0.0 cfs

The high flow months are December through May. If you have any questions concerning this analysis, please let me know.

FLOW CONVERSIONS

CFS x 0.6463 = MGD

HIGH FLOW 1Q10 EQUALS 0.08 x 0.6463 = 0.051704 MGD

HIGH FLOW 7Q10 EQUALS 0.10 x 0.6463 = 0.06463 MGD

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Preston Bryant
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

April 29, 2009

Mr. Larry Massie
Acting Superintendent
Orange County Public Schools
437 Waugh Boulevard
Orange, VA 22960

Re: Lightfoot Elementary School STP Inspection – VA0062961

Dear Mr. Massie:

Attached is a copy of the site inspection report and laboratory report generated while conducting a Facility Technical Inspection at the Lightfoot Elementary - School Sewage Treatment Plant (STP) on April 14, 2009. The compliance staff would like to thank Mr. Tim Jenkins for his time and assistance during the inspection.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at (703) 583-3833 or by E-mail at twnelson@deq.virginia.gov.

Sincerely,

Terry Nelson

Terry Nelson
Environmental Specialist II

cc: Permit/DMR File
OWCP - SGStell
Electronic Copy: Compliance Manager; Compliance Auditor
Electronic Copy: Mr. Tim Jenkins – Dabney & Crooks

Attachment 2

DEQ
WASTEWATER FACILITY INSPECTION REPORT
PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0062961	**01/19/2004**		**01/18/2009**

Facility Name	Address	Telephone Number
Lightfoot Elementary School	**11360 Zachary Taylor Highway Unionville, VA 22567**	**(540) 661-4520**
Owner Name	Address	Telephone Number
Orange County Public Schools	**437 Waugh Boulevard Orange, VA 22960**	**(540) 661-4550**
Responsible Official	Title	Telephone Number
Mr. Larry Massie	**Acting Superintendent**	**(540) 661-4550**
Responsible Operator	Operator Cert. Class/number	Telephone Number
Douglas Crooks	**Class I / 1909000367**	**(540) 373-0380**

TYPE OF FACILITY:

DOMESTIC				**INDUSTRIAL**			
Federal		Major		Major		Primary	
Non-federal	**X**	Minor	**X**	Minor		Secondary	

INFLUENT CHARACTERISTICS:	DESIGN:
Flow	**4,000 gal/day**
Population Served	**Variable**
Connections Served	**One school**
BOD_5	**No data**
TSS	**No data**

EFFLUENT LIMITS: Units in mg/L unless otherwise specified.

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**0.004**	**NL**	**BOD_5**		**24**	**36**
pH (S.U.)	**6.0**		**9.0**	**Total Contact Cl**	**1.0**		
TSS		**24**	**36**	**Inst Tech Min Cl**	**0.6**		
DO	**5.0**			**Inst Res Max Cl**		**0.008**	**0.010**
NH_3		**7.8**	**7.8**				

Receiving Stream	**UT to Riga Run**
Basin	**Rappahannock River**
Discharge Point (LAT)	**38° 14 30" N**
Discharge Point (LONG)	**77° 57' 15" W**

Virginia Department of Environmental Quality
Northern Regional Office

FOCUSED CEI TECH/LAB INSPECTION REPORT

FACILITY NAME: Lightfoot Elementary School		**INSPECTION DATE:**	April 14, 2009
		INSPECTOR	Terry Nelson
PERMIT No.: VA0062961		**REPORT DATE:**	April 24, 2009
TYPE OF FACILITY: ☑ Municipal ☐ Major ☐ Industrial ☑ Minor ☐ Federal ☐ Small Minor ☐ HP ☐ LP		**TIME OF INSPECTION:**	Arrival 0830 / Departure 0920
		TOTAL TIME SPENT (including prep & travel)	4 hours
PHOTOGRAPHS: ☑ Yes ☐ No		**UNANNOUNCED INSPECTION?**	☐ Yes ☑ No
REVIEWED BY / Date:			
PRESENT DURING INSPECTION: Tim Jenkins, Dabney & Crooks			

TECHNICAL INSPECTION

1. Has there been any new construction? • If so, were plans and specifications approved? Comments:	☐ Yes ☑ No
2. Is the Operations and Maintenance Manual approved and up-to-date? Comments: Outdated permit in Appendix, DEQ phone numbers are not consistent (703-583-3800 is recommended), outdated Chain of Custody for Patton, Harris, and Rust, some test methods listed are no longer approved	☐ Yes ☑ No
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator being met? Comments:	☑ Yes ☐ No
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? Comments:	☑ Yes ☐ No
5. Is there an established and adequate program for training personnel? Comments:	☑ Yes ☐ No
6. Are preventive maintenance task schedules being met? Comments:	☑ Yes ☐ No
7. Does the plant experience any organic or hydraulic overloading? Comments:	☐ Yes ☑ No
8. Have there been any bypassing or overflows since the last inspection? Comments:	☐ Yes ☑ No
9. Is the standby generator (including power transfer switch) operational and exercised regularly? Comments: **Not Applicable**	☐ Yes ☐ No
10. Is the plant alarm system operational and tested regularly? Comments:	☑ Yes ☐ No

Virginia Department of Environmental Quality
Northern Regional Office

FOCUSED CEI TECH/LAB INSPECTION REPORT

FACILITY NAME: Lightfoot Elementary School		**INSPECTION DATE:**	April 14, 2009
		INSPECTOR	Terry Nelson
PERMIT No.: VA0062961		**REPORT DATE:**	April 24, 2009
TYPE OF FACILITY: ☑ Municipal ☐ Major ☐ Industrial ☑ Minor ☐ Federal ☐ Small Minor ☐ HP ☐ LP		**TIME OF INSPECTION:**	Arrival 0830 / Departure 0920
		TOTAL TIME SPENT (including prep & travel)	4 hours
PHOTOGRAPHS: ☑ Yes ☐ No		**UNANNOUNCED INSPECTION?**	☐ Yes ☑ No
REVIEWED BY / Date: [signature] 4/20/09			
PRESENT DURING INSPECTION: Tim Jenkins, Dabney & Crooks			

TECHNICAL INSPECTION

1. Has there been any new construction? • If so, were plans and specifications approved? Comments:	☐ Yes ☑ No
2. Is the Operations and Maintenance Manual approved and up-to-date? Comments: Outdated permit in Appendix, DEQ phone numbers are not consistent (703-583-3800 is recommended), outdated Chain of Custody for Patton, Harris, and Rust, some test methods listed are no longer approved	☐ Yes ☑ No
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator being met? Comments:	☑ Yes ☐ No
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? Comments:	☑ Yes ☐ No
5. Is there an established and adequate program for training personnel? Comments:	☑ Yes ☐ No
6. Are preventive maintenance task schedules being met? Comments:	☑ Yes ☐ No
7. Does the plant experience any organic or hydraulic overloading? Comments:	☐ Yes ☑ No
8. Have there been any bypassing or overflows since the last inspection? Comments:	☐ Yes ☑ No
9. Is the standby generator (including power transfer switch) operational and exercised regularly? Comments: **Not Applicable**	☐ Yes ☐ No
10. Is the plant alarm system operational and tested regularly? Comments:	☑ Yes ☐ No

Permit #	VA0062961

TECHNICAL INSPECTION

11. Is sludge disposed of in accordance with the approved sludge management plan? Comments: Wheeler Septic hauls sludge to Massaponax WWTF	☑ Yes ☐ No
12. Is septage received? • If so, is septage loading controlled, and are appropriate records maintained? Comments:	☐ Yes ☑ No
13. Are all plant records (operational logs, equipment maintenance, industrial waste contributors, sampling and testing) available for review and are records adequate? Comments:	☑ Yes ☐ No

14. Which of the following records does the plant maintain?

☑ Operational logs ☑ Instrument maintenance & calibration

☑ Mechanical equipment maintenance ☐ Industrial Waste Contribution (Municipal facilities)

Comments:

15. What does the operational log contain?

☑ Visual observations ☑ Flow Measurement ☑ Laboratory results ☑ Process adjustments

☐ Control calculations ☐ Other (specify)

Comments:

16. What do the mechanical equipment records contain?

☐ As built plans and specs ☑ Manufacturers instructions ☑ Lubrication schedules

☐ Spare parts inventory ☐ Equipment/parts suppliers

☐ Other (specify)

Comments:

17. What do the industrial waste contribution records contain (Municipal only)?

☐ Waste characteristics ☐ Impact on plant ☐ Locations and discharge types

☐ Other (specify)

Comments: **Not applicable**

18. Which of the following records are kept at the plant and available to personnel?

☑ Equipment maintenance records ☑ Operational log ☐ Industrial contributor records

☑ Instrumentation records ☑ Sampling and testing records

Comments:

19. List records not normally available to plant personnel and their location:

Comments: **Major maintenance records stored at Orange County Schools superintendent office.**

20. Are the records maintained for the required time period (three or five years)? Comments:	☑ Yes ☐ No

Permit #	VA0062961

UNIT PROCESS EVALUATION SUMMARY SHEET

UNIT PROCESS	APPLICABLE	PROBLEMS*	COMMENTS
Sewage Pumping			
Flow Measurement (Influent)			
Screening/Comminution			
Grit Removal			
Flow Equalization	X		
Primary Sedimentation			
Septic Tank and Sand Filter	X		
Activated Sludge Aeration	X		
Secondary Sedimentation	X		
Flocculation			
Tertiary Sedimentation			
Filtration			
Chlorination	X		
Dechlorination	X		
Post Aeration	X		
Flow Measurement (Effluent)	X		
Plant Outfall	X		
Sludge Pumping			
Aerobic Digestion			

* Problem Codes

1. Unit Needs Attention
2. Abnormal Influent/Effluent
3. Evidence of Equipment Failure
4. Unapproved Modification or Temporary Repair
5. Evidence of Process Upset
6. Other (explain in comments)

Permit #	VA0062961

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

- Operators are at the facility approximately 30 minutes per visit. The plant is not manned when school is not in session or no discharge is anticipated.
- Orange County schools were not in session during the inspection.
- A grease trap and septic tank precede the treatment system. Orange County Schools maintains the grease trap and septic tank. The septic tank was pumped out in July 2008.
- The secondary treatment system is a package plant that contains a sludge holding tank, aeration basins, and clarifier.
- An animal has created a burrow adjacent to the package plant outfall pipe or the ground has eroded at this location. The hole should be filled, and if caused by an animal; the animal removed.
- The log book is stored in the laboratory building. The log book included entries for minor maintenance performed on the system.
- The laboratory building has equipment, chemical pumps, and chemical tanks that are no longer used.
- Mr. Jenkins cycled all the blowers during the inspection. No problems were noted for the blowers.
- The aeration basin color was an unusual shade of brown that stabilized as the recycle pumps ran. Without school in session, negligible influent flow had been received since last Friday according to Mr. Jenkins.
- From the clarifier, the effluent pipe goes down hill, turns right, and enters the disinfection and post aeration systems.
- Where the pipe turns, there is a manhole with an open grate top. Leaves and debris have fallen through the grate. A high water flow, including overland sheetflow, could flush this debris into the disinfection system.
- Tablet feeders are used for chlorine and sodium bisulfite.
- Post aeration is provided using a blower.
- Appreciable foam was collecting in the post aeration chamber.
- No foam appeared to be exiting the plant.
- Mr. Jenkins said the foam was a combination of no discharge and the extended treatment time when no flow enters the treatment system.
- From the plant, the effluent flows to a drainage ditch along Route 522.

1) Hole observed by package plant outlet pipe.

Permit #	VA0062961

LABORATORY INSPECTION

PRESENT DURING INSPECTION: Tim Jenkins, Dabney & Crooks

1.	Do lab records include sampling date/time, analysis date/time, sample location, test method, test results, analyst's initials, instrument calibration and maintenance, and Certificate of Analysis? ☑ Sampling Date/Time ☑ Analysis Date/Time ☐ Sample Location ☑ Test Method ☑ Test Results ☑ Analyst's Initials ☐ Instrument Calibration & Maintenance ☐ Chain of Custody ☑ Certificate of Analysis		
2.	Are Discharge Monitoring Reports complete and correct? Month(s) reviewed: December 2008 to February 2009	☑ Yes	☐ No
3.	Are sample location(s) according to permit requirements (after all treatment unless otherwise specified)?	☑ Yes	☐ No
4.	Are sample collection, preservation, and holding times appropriate; and is sampling equipment adequate?	☑ Yes	☐ No
5.	Are grab and composite samples representative of the flow and the nature of the monitored activity?	☑ Yes	☐ No
6.	If analysis is performed at another location, are shipping procedures adequate? List parameters and name & address of contract lab(s): **Dabney & Crooks, Fredericksburg, VA: BOD and TSS** **Patton, Harris, and Rust, Fredericksburg, VA: Nitrogen**	☑ Yes	☐ No
7.	Is Laboratory equipment in proper operating range?	☑ Yes	☐ No
8.	Are annual thermometer calibration(s) adequate?	☑ Yes	☐ No
9.	Is the laboratory grade water supply adequate? **Not applicable**	☐ Yes	☐ No
10.	Are analytical balance(s) adequate? **Not applicable**	☐ Yes	☐ No

11. Parameters evaluated during this inspection (attach checklists):

- ☐ pH
- ☐ Temperature
- ☐ Total Residual Chlorine
- ☐ Dissolved Oxygen
- ☐ Biochemical Oxygen Demand
- ☐ Total Suspended Solids
- ☐ Ammonia
- ☐ TKN
- ☐ Nitrate + Nitrite
- ☐ Othophosphate
- ☐ Bacteriological ☐ Fecal Coliform ☐ E. Coli ☐ Enterococci

Comments:

- The pH buffers, DPD pillows, and Hach Spec Check Standards are kept at the Lightfoot Elementary School.
- Meter calibration is normally done at Lightfoot Elementary School, but operators can take the supplies to another school if the first plant visit is not Lightfoot Elementary.
- Operator logs show proper calibration procedures are followed. Since the facility was not discharging, the operator did not perform meter calibration.
- DEQ staff did check the meter condition and lab supplies.
- The membrane and the probe for the DO meter were in good condition. The DO meter thermistor had been verified against a NIST thermometer on 09/08/08 and read 0.1 degree C low.
- The lot number for the DPD pillows was A8212 with an expiration date of July 2013.
- The Hach Spec Checks were lot A7332 and expire November 2009.
- The vials for the Hach Pocket Colorimeter II did not appear scratched, but did need cleaned.
- The pH 4 buffer expires in July 2010, the pH 7 buffer expires in December 2010, and the pH 10 buffer expires in July 2010. All three buffers were clear with no debris in the bottles.
- Mr. Jenkins had just obtained the pH meter and had not had the thermistor verified against a NIST thermometer. The verification was completed 04/15/09.

Permit #	VA0062961

EFFLUENT FIELD DATA:

Flow	NA MGD	**Dissolved Oxygen**	NA mg/L	**TRC (Contact Tank)**	NA mg/L
pH	NA S.U.	**Temperature**	NA °C	**TRC (Final Effluent)**	NA mg/L
Was a Sampling Inspection conducted?	☐ Yes (see Sampling Inspection Report) ☑ No				

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall: ☐ Shore based ☐ Submerged Diffuser? ☐ Yes ☐ No
2. Are the outfall and supporting structures in good condition? ☐ Yes ☐ No
3. Final Effluent (evidence of following problems): ☐ Sludge bar ☐ Grease
   ☐ Turbid effluent ☐ Visible foam ☐ Unusual color ☐ Oil sheen
4. Is there a visible effluent plume in the receiving stream? ☐ Yes ☐ No
5. Receiving stream: ☐ No observed problems ☐ Indication of problems (explain below)

   Comments: **No discharge during inspection.**

REQUIRED CORRECTIVE ACTIONS:

None

NOTES and COMMENTS:

1. **Debris and leaves should be removed from the manhole with an open grate.**
2. **Orange County Schools should consider using a solid manhole cover instead of an open grate cover for this manhole.**
3. **The hole/burrow near the package plant exit pipe should be filled and steps taken to prevent another hole from appearing.**

To:	Joan Crowther
From:	Jennifer Carlson
Date:	October 22, 2014
Subject:	Planning Statement for Lightfoot Elementary School WWTP
Permit Number:	VA0062961

Information for Outfall 001:

Discharge Type: Municipal, Minor
Discharge Flow: 0.004 MGD
Receiving Stream: Riga Run, UT
Latitude / Longitude: 38° 14' 51" 77° 57' 12"
Rivermile: 0.17
Streamcode: 8-XDI
Waterbody: VAN-F07
Water Quality Standards: York River, Section 3, Stream Class III, Special Standards None
Drainage Area: 0.74 sq.mi.

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

   This facility discharges into an unnamed tributary to Riga Run. This unnamed tributary has not been monitored or assessed by DEQ. There is a DEQ monitoring station (8-RIG004.52) located on Riga Run, approximately 1.1 miles downstream of Outfall 001 at the Route 650 bridge crossing. However, the majority of the samples were collected at this station in the 1999-2000 timeframe, with the last station visit in 2006. The water quality summary for Riga Run is presented at the end of this section. The nearest downstream DEQ ambient monitoring station with recent data is 8-TRY004.98 on Terrys Run, located at the Route 629 bridge crossing, approximately 6.1 miles downstream of Outfall 001. The following is the water quality summary for this segment of Terrys Run, as taken from the 2012 Integrated Report:

   Class III, Section 3.

   DEQ monitoring station located in this segment of Terrys Run:
   - *Ambient monitoring station 8-TRY004.98, at Route 629.*

   The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. Additionally, excursions above the fish tissue value (TV) of 300 parts per billion (ppb) for mercury (Hg) in fish tissue were recorded in tissue from one species (bluegill sunfish) of fish sampled in 2006 (two total excursions) at monitoring station 8-TRY004.98, noted by an observed effect.

   There was no new E. coli monitoring for the 2012 assessment. The bacteria impairment listed in the 2010 assessment will be carried forward. A bacteria TMDL for the Terrys Run watershed has been completed and approved. The aquatic life and wildlife uses are considered fully supporting.

The following is the water quality summary for Riga Run, as taken from the 2012 Integrated Report:

Class III, Section 3.

DEQ monitoring stations located in this segment of Riga Run:

- *Ambient monitoring station 8-RIG004.52, at Route 650*
- *Freshwater probabilistic monitoring station 8-RIG003.01, 1.5 rivermiles downstream of Route 650.*

The aquatic life, wildlife, and fish consumption uses are considered fully supporting. The recreation use was not assessed.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

   No.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

   Yes.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the 2012 Integrated Report							
Terrys Run	Recreation	*E. coli*	5.8 miles	York River Basin (Lake Anna Tribs) Bacteria 11/04/05	6.98E+09 cfu/year *E. coli*	126 cfu/100ml *E. coli* --- 0.004 MGD	N/A
	Fish Consumption	PCBs		N/A	---	---	2018

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

   In support for the PCB impairment listed for Terrys Run and downstream in Lake Anna, this facility is a candidate for low-level PCB monitoring, based upon its designation as a minor municipal facility. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility, as it is a small wastewater treatment facility (<0.1 MGD) and is not expected to be a source of PCBs. Based upon this information, this facility will not be requested to monitor for low-level PCBs.

There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

   There are no public water supply intakes located within 5 miles of this discharge.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Lightfoot Elementary School Wastewater Treatment PlanPermit No.: VA0062961

Receiving Stream: Riga Run, UT

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	50 mg/L
90% Temperature (Annual) =	deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	21 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	deg C
90% Maximum pH =	SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.8 SU
10% Maximum pH =	SU	30Q10 (Wet season)	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	0.004 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile [C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	1.21E+01	2.10E+00	na	--	1.21E+01	2.10E+00	na	--	--	--	--	--	--	--	--	--	1.21E+01	2.10E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.21E+01	3.18E+00	na	--	1.21E+01	3.18E+00	na	--	--	--	--	--	--	--	--	--	1.21E+01	3.18E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine [C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	1.8E+00	6.6E-01	na	--	1.8E+00	6.6E-01	na	--	--	--	--	--	--	--	--	--	1.8E+00	6.6E-01	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	3.2E+02	4.2E+01	na	--	3.2E+02	4.2E+01	na	--	--	--	--	--	--	--	--	--	3.2E+02	4.2E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	7.0E+00	5.0E+00	na	--	7.0E+00	5.0E+00	na	--	--	--	--	--	--	--	--	--	7.0E+00	5.0E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene[C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene[C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+01	5.6E+00	na	--	--	--	--	--	--	--	--	--	4.9E+01	5.6E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+02	1.1E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.0E+02	1.1E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine[C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine[C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine[C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total[C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	4.2E+03
Silver	0	1.0E+00	--	na	--	1.0E+00	--	na	--	--	--	--	--	--	--	--	--	1.0E+00	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	--	--	na	4.0E+01
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	--	--	na	4.7E-01
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	--	--	na	6.0E+03
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	2.8E-03
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	7.2E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	--	--	na	7.0E+01
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
Zinc	0	6.5E+01	6.6E+01	na	2.6E+04	6.5E+01	6.6E+01	na	2.6E+04	--	--	--	--	--	--	--	--	6.5E+01	6.6E+01	na	2.6E+04

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	3.9E-01
Chromium III	2.5E+01
Chromium VI	6.4E+00
Copper	2.8E+00
Iron	na
Lead	3.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	6.8E+00
Selenium	3.0E+00
Silver	4.2E-01
Zinc	2.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Lightfoot Elementary School Wastewater Treatment Plant
pH and Temperature Data August 2010 through August 2014

Month	Day	pH	temperature
10-Aug	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
10-Sep	1		
	2		
	3		
	4		
	5		
	6		
	7	6.8	22
	8	7.2	23
	9	7.6	20
	10	7.8	21
	11		
	12		
	13	7.5	20
	14	7.4	22
	15	7.7	22
	16	7	21
	17	7.5	22
	18		
	19		
	20	6.8	22
	21	7.4	22
	22	7.2	23
	23	7	21
	24	7.1	22
	25		
	26		
	27	7	21

Month	Day	pH	temperature
10-Sep	27	7	21
	28	7	20
	29	7.1	21
	30	7.1	20
10-Oct	1	7.6	21
	2		
	3		
	4	7.1	19
	5	7.8	20
	6		18
	7	7.6	18
	8	7.7	19
	9		
	10		
	11	7.4	19
	12	7.8	19
	13	7.3	19
	14	7.9	18
	15		
	16		
	17		
	18	7.1	18
	19	7.6	19
	20	7.4	19
	21	7.7	20
	22	7.6	19
	23		
	24		
	25	6.9	17
	26	7.7	18
	27	7.5	18
	28	7.7	18
	29	7.6	18
	30		
	31		
10-Nov	1	6.8	15
	2		
	3		
	4	7.6	16
	5	7.7	15
	6		
	7		
	8	7.2	15
	9	7.4	15
	10	7.2	15
	11	7.5	15
	12	7.3	15
	13		
	14		
	15	7.3	15
	16	7.4	15
	17	7.9	14
	18	7.9	15
	19	7.8	14
	20		
	21		
	22	7.6	15
	23	7.6	14

Month	Day	pH	temperature
10-Nov	24	7.6	13
	25		
	26		
	27		
	28		
	29	6.9	11
	30	7	12
10-Dec	1	7	12
	2	7.6	15
	3	7.7	13
	4		
	5		
	6	7.6	12
	7	7.8	12
	8	7.7	11
	9	7.6	11
	10	7.7	9
	11		
	12		
	13	7.6	8
	14	7.7	8
	15	7.8	5
	16		
	17		
	18		
	19		
	20	7.8	4
	21	7.7	6
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
11-Jan	1		
	2		
	3	7.1	7
	4	7.5	7
	5	7.4	6
	6	7.8	8
	7	7.7	7
	8		
	9		
	10	6.8	6
	11	7	6
	12	7.6	6
	13	7.7	7
	14	7.8	8
	15		
	16		
	17		
	18		
	19	6.6	7
	20	7.5	10

Attachment 5

Lightfoot Elementary School Wastewater Treatment Plant
pH and Temperature Data August 2010 through August 2014

Month	Day	pH	temperature
11-Jan	21	7.7	8
	22		
	23		
	24	7	6
	25	7.3	7
	26	7.2	7
	27		
	28	7.4	6
	29		
	30		
	31	7.2	5
11-Feb	1	7.5	6
	2	7.3	7
	3	7.8	6
	4	7.4	6
	5		
	6		
	7	7	6
	8	7.5	8
	9	7.4	7
	10		
	11	7.6	7
	12		
	13		
	14	7.4	8
	15	7.7	7
	16	7.8	8
	17	7.8	9
	18	7.9	11
	19		
	20		
	21	7.7	12
	22	7.6	9
	23	7.6	9
	24	7.6	9
	25	7.5	9
	26		
	27		
	28	6.8	10
11-Mar	1	7	8
	2	7.5	10
	3	7.8	10
	4	7.7	9
	5		
	6		
	7	7.4	10
	8	7.6	10
	9	6.9	9
	10	7.3	10
	11	7.5	10
	12		
	13		
	14	7.4	10
	15	7.4	10
	16	7.3	10
	17	7.6	11
	18	7.7	11
	19		

Month	Day	pH	temperature
11-Mar	20		
	21	7.4	12
	22	7.8	13
	23	7.5	12
	24	6.9	12
	25	7.6	13
	26		
	27		
	28	7.2	11
	29	7.6	11
	30	7.3	11
	31	7.4	11
11-Apr	1	7.6	11
	2		
	3		
	4	7.2	12
	5	7.8	12
	6	7.7	12
	7	7.7	12
	8	7.8	12
	9		
	10		
	11	7.6	14
	12	7.8	13
	13	7.7	13
	14	7.9	12
	15	7.7	11
	16		
	17		
	18	7.9	14
	19	7.7	14
	20	7.9	15
	21		
	22		
	23		
	24		
	25		
	26	7.9	17
	27	7.6	17
	28	7.8	18
	29	7.6	17
	30		
11-May	1		
	2	7.2	16
	3	7.8	18
	4	7.8	17
	5	7.8	16
	6	7.9	16
	7		
	8		
	9	7.5	16
	10	7.6	16
	11	7.9	16
	12	7.6	17
	13	7.8	17
	14		
	15		
	16	7.8	17

Month	Day	pH	temperature
11-May	17	7.4	17
	18	7.9	18
	19	7.8	17
	20	7.6	17
	21		
	22		
	23	7.5	18
	24	7.8	18
	25	7.7	18
	26	7.8	19
	27	7.8	19
	28		
	29		
	30		
	31	7.1	21
11-Jun	1	7.6	22
	2	7.6	22
	3	7.7	20
	4		
	5	7.8	21
	6	7.7	21
	7	7.8	22
	8	7.7	22
	9	7.7	22
	10	7.8	22
	11		
	12		
	13	7.9	21
	14	7.9	21
	15	7.9	21
	16	7.9	21
	17	7.8	21
	18		
	19		
	20		
	21	7.6	22
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
11-Jul	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		

Attachment 5

Lightfoot Elementary School Wastewater Treatment Plant
pH and Temperature Data August 2010 through August 2014

Month	Day	pH	temperature
11-Jul	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
11-Aug	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
11-Sep	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		

Month	Day	pH	temperature
11-Sep	10		
	11		
	12		
	13		
	14	8.4	22
	15	7	22
	16	8.2	19
	17		
	18		
	19	8.2	20
	20	8.4	21
	21	8.3	20
	22	8.1	21
	23	7.2	21
	24		
	25		
	26	8.4	21
	27	8.6	22
	28	7.3	22
	29	7.3	22
	30	7.2	21
11-Oct	1		
	2		
	3	8	16
	4	8	17
	5	7.2	19
	6	7.1	19
	7	7.6	16
	8		
	9		
	10	7.4	19
	11	6.7	19
	12	7	18
	13	7.1	18
	14	6.3	19
	15		
	16		
	17	7	18
	18	6.4	18
	19	6.4	19
	20	6.7	19
	21	6.9	19
	22		
	23		
	24	6.6	14
	25	7.2	17
	26	6.7	16
	27	6.9	16
	28	6.7	16
	29		
	30		
	31	6.3	15
11-Nov	1	7.1	14
	2	7.2	14
	3	7.2	14
	4	7	14
	5		
	6		

Month	Day	pH	temperature
11-Nov	7	6.3	12
	8	7.8	12
	9	6.9	13
	10	6.7	14
	11	6.7	14
	12		
	13		
	14	7.3	13
	15	7.1	15
	16	7.1	16
	17	7.2	14
	18	7.1	13
	19		
	20		
	21	7	13
	22	7.1	14
	23		
	24		
	25		
	26		
	27		
	28	7	14
	29	7	14
	30	7	14
11-Dec	1	7	13
	2	6.1	13
	3		
	4		
	5	6.6	13
	6	6.6	13
	7	6.8	14
	8	6.7	12
	9	6.5	9
	10		
	11		
	12	7	6
	13	7.2	11
	14	7	11
	15	7	11
	16	7	10
	17		
	18		
	19	6.2	11
	20	6.9	10
	21	6.7	12
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
12-Jan	1		
	2		
	3	6.7	8

Attachment 5

Lightfoot Elementary School Wastewater Treatment Plant
pH and Temperature Data August 2010 through August 2014

Month	Day	pH	temperature
12-Jan	4	7.8	8
	5	7.9	9
	6	7.8	9
	7		
	8		
	9	7.3	8
	10	7.7	9
	11	7.9	9
	12	7.9	9
	13	7.9	10
	14		
	15		
	16		
	17	8.4	8
	18	7.1	9
	19	7.9	9
	20	7.9	9
	21		
	22		
	23	6.8	7
	24	7.7	9
	25	7.9	10
	26	8	10
	27	8	11
	28		
	29		
	30	7.9	11
	31	6.6	10
12-Feb	1	6.9	11
	2	7	11
	3	7	11
	4		
	5		
	6	6.5	9
	7	6.7	9
	8	7.2	9
	9	7.1	9
	10	7	9
	11		
	12		
	13	6.6	8
	14	7.5	8
	15	6.8	10
	16	7	10
	17	7	10
	18		
	19		
	20	7.6	7
	21	7.2	9
	22	6.4	9
	23	7.2	11
	24	7.1	11
	25		
	26		
	27	6.9	6
	28	7.6	10
	29	7.3	10
12-Mar	1	6.9	11

Month	Day	pH	temperature
12-Mar	2	7	11
	3		
	4		
	5	6.8	9
	6	7.2	7
	7	6.5	10
	8	6.3	11
	9	6.8	12
	10		
	11		
	12	7.4	10
	13	7.2	13
	14	6.7	12
	15	6.4	13
	16	6.9	13
	17		
	18		
	19	6.9	12
	20	6.6	14
	21	6.6	15
	22	6.8	15
	23	6.8	15
	24		
	25		
	26	6.4	14
	27	7.3	13
	28	6.5	14
	29	6.7	13
	30	6.9	13
	31		
12-Apr	1		
	2	6.3	14
	3	7.2	14
	4	6.8	14
	5	6.5	14
	6		
	7		
	8		
	9		
	10		
	11		
	12	6.7	14
	13	6.8	14
	14		
	15		
	16	6.7	15
	17	6.9	16
	18	6.1	15
	19	6.8	15
	20	6.8	15
	21		
	22		
	23	6.7	15
	24	6.9	14
	25	7.1	14
	26	6.9	14
	27	6.9	15
	28		

Month	Day	pH	temperature
12-Apr	29		
	30	7.4	14
12-May	1	6.9	16
	2	6.9	17
	3	6.1	16
	4	6.2	18
	5		
	6		
	7	6.9	18
	8	7	18
	9	6.9	18
	10	7.2	20
	11	7.1	19
	12		
	13		
	14	6.3	18
	15	6.9	18
	16	7.6	18
	17	7.8	19
	18	7.6	19
	19		
	20		
	21	6.7	19
	22	7	19
	23	6.6	19
	24	6.7	19
	25	6.9	19
	26		
	27		
	28		
	29	6.3	22
	30	7.1	21
	31	7.6	21
12-Jun	1	6.8	19
	2		
	3		
	4	7	20
	5	7.3	20
	6	7.4	20
	7	7.8	19
	8	7.5	19
	9		
	10		
	11	6.9	21
	12	6.3	21
	13	7.4	20
	14	7.9	21
	15	7.5	21
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		

Attachment 5

Lightfoot Elementary School Wastewater Treatment Plant
pH and Temperature Data August 2010 through August 2014

Month	Day	pH	temperature
12-Jun	26		
	27		
	28		
	29		
	30		
12-Jul	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
12-Aug	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		

Month	Day	pH	temperature
12-Aug	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
12-Sep	1		
	2		
	3		
	4	7.8	24
	5	7.3	24
	6	7.2	23
	7	7	23
	8		
	9		
	10	7.3	22
	11	8.1	21
	12	7.6	21
	13	7.4	20
	14	7.3	20
	15		
	16		
	17	7.4	21
	18	7.3	21
	19	7.5	21
	20	7.6	20
	21	7.5	20
	22		
	23		
	24	6.6	20
	25	7.3	20
	26	6.9	20
	27	6.7	21
	28	6.9	21
	29		
	30		
12-Oct	1	6.5	19
	2	7	19
	3	6.8	21
	4	6.9	20
	5	7	20
	6		
	7		
	8	6.5	19
	9	7.4	19
	10	6.6	18
	11	6.8	18
	12	6.9	19
	13		
	14		
	15	7.7	19
	16	7.1	18
	17	6.6	17
	18	7.1	18
	19	7	18

Month	Day	pH	temperature
12-Oct	20		
	21		
	22	7.3	17
	23	6.8	18
	24	6.5	18
	25	6.6	18
	26	7.2	17
	27		
	28		
	29		
	30		
	31	6.9	15
12-Nov	1	7.1	15
	2	7.2	15
	3		
	4		
	5	7	14
	6		
	7	6.6	14
	8	6.9	14
	9	6.9	13
	10		
	11		
	12	6.3	14
	13	7.4	12
	14	7.2	12
	15	7.1	13
	16	7.8	14
	17		
	18		
	19	7	14
	20	7.4	14
	21		
	22		
	23		
	24		
	25		
	26	6.2	12
	27	6.9	12
	28	7	12
	29	6.8	11
	30	6.8	11
12-Dec	1		
	2		
	3	6.6	12
	4	7.6	13
	5	7.3	14
	6	7.3	12
	7	7.2	12
	8		
	9		
	10	6.3	14
	11	7.5	13
	12	7.4	13
	13	7.3	12
	14	6.8	12
	15		
	16		

Attachment 5

Lightfoot Elementary School Wastewater Treatment Plant
pH and Temperature Data August 2010 through August 2014

Month	Day	pH	temperature
12-Dec	17	6.9	12
	18	7.4	13
	19	7.5	12
	20	7.4	12
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
13-Jan	1		
	2	8.1	11
	3	7.5	8
	4	7.3	8
	5		
	6		
	7	6.8	9
	8	7.2	8
	9	7.1	10
	10	7.4	11
	11	7.2	11
	12		
	13		
	14	6.7	14
	15	7	11
	16	7.3	10
	17	7.6	9
	18	7.4	9
	19		
	20		
	21		
	22	7.9	9
	23	7.6	9
	24	7.2	7
	25		
	26		
	27		
	28		
	29	7.5	11.4
	30	6.9	10
	31	7.7	9
13-Feb	1	7.3	9
	2		
	3		
	4	7	7
	5	7.3	9
	6	7.6	9
	7	7.6	9
	8	7.4	9
	9		
	10		
	11	7	9
	12	7.2	10

Month	Day	pH	temperature
13-Feb	13	6.9	10
	14	7	10
	15	6.4	10
	16		
	17		
	18	7	7
	19	7.2	9
	20	8	9
	21	7.9	9
	22	7.6	9
	23		
	24		
	25	7.4	9
	26	7.2	9
	27	8	9
	28	7.4	10
13-Mar	1	6.4	9
	2		
	3		
	4	7.1	8
	5	6.9	9
	6		
	7		
	8		
	9		
	10		
	11	6.2	7
	12	6.8	9
	13	7	9
	14	6.8	8
	15	7.1	7
	16		
	17		
	18		
	19	6.5	7
	20	6.5	10
	21	6.9	9
	22	6.5	7
	23		
	24		
	25		
	26	7.1	7
	27	7	9
	28	7.1	10
	29	7.1	9
	30		
	31		
13-Apr	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8	6.9	11
	9	7.6	12
	10	7.2	13
	11	7.4	14

Month	Day	pH	temperature
13-Apr	12	7.3	13
	13		
	14		
	15	7.9	13
	16	7.5	15
	17	7.1	16
	18	7.2	16
	19	7.1	16
	20		
	21		
	22	6.8	11
	23	7.4	14
	24	7.3	15
	25	7.1	15
	26	7.1	12
	27		
	28		
	29	6.6	14
	30	7.1	16
13-May	1	6.8	15
	2	6.8	15
	3	6.9	14
	4		
	5		
	6	6.7	15
	7	7.2	16
	8	7	16
	9	7	16
	10	6.6	16
	11		
	12		
	13	8	14
	14	7.6	16
	15	7.4	17
	16	7.1	17
	17	7	17
	18		
	19		
	20	6.5	17
	21	7.1	19
	22	6.8	18
	23	7.5	18
	24	7.2	17
	25		
	26		
	27		
	28	7.9	16
	29	7.4	18
	30	7.4	19
	31	8.1	19
13-Jun	1		
	2		
	3	7.8	20
	4	7.2	20
	5	7.3	19
	6	7.6	20
	7	7.4	20
	8		

Attachment 5

Lightfoot Elementary School Wastewater Treatment Plant
pH and Temperature Data August 2010 through August 2014

Month	Day	pH	temperature
13-Jun	9		
	10	7.2	19
	11	7.3	20
	12	7.1	20
	13	6.8	22
	14	6.9	22
	15		
	16		
	17	7.2	21
	18	7.8	20
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
13-Jul	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
13-Aug	1		
	2		
	3		
	4		
	5	6.3	20

Month	Day	pH	temperature
13-Aug	6	7	20
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27	7.6	20
	28		
	29		
	30		
	31		
13-Sep	1		
	2		
	3	7.3	22
	4	7.8	22
	5	7.3	22
	6	7.2	22
	7		
	8		
	9	7.6	21
	10	7.8	21
	11	7.6	22
	12	7.8	23
	13	7.6	22
	14		
	15		
	16	7.4	18
	17	7.3	20
	18	7.6	21
	19	7.3	20
	20	7.2	20
	21		
	22		
	23	7.9	19
	24	8	18
	25	7.5	20
	26	7.9	19
	27	7.6	17
	28		
	29		
	30	7.2	17
13-Oct	1	7.1	18.3
	2	7.4	21

Month	Day	pH	temperature
13-Oct	3	7.3	21
	4	7.2	21
	5		
	6		
	7	7.4	21
	8	7.5	18
	9	7.1	20
	10	7.1	20
	11	7	19
	12		
	13		
	14	6.5	18
	15	7.4	17
	16	7.1	20
	17	8.3	19
	18	7.4	19
	19		
	20		
	21	7.9	18
	22	7.2	17
	23	7.8	16
	24	7.8	12
	25	7.6	13
	26		
	27		
	28	7.4	13
	29	7.1	15
	30	7.5	16
	31	7.9	16
13-Nov	1	7.6	17
	2		
	3		
	4	7.1	15
	5	7.2	11
	6	7.4	16
	7	7.3	16
	8	7.3	16
	9		
	10		
	11	6.7	13
	12	7	12
	13	7.8	11
	14	7.9	13
	15	7.1	13
	16		
	17		
	18	7.2	14
	19	7.1	12
	20	7.6	14
	21	7.5	13
	22	7.5	13
	23		
	24		
	25	7.5	8
	26	7.1	10
	27		
	28		
	29		

Attachment 5

Lightfoot Elementary School Wastewater Treatment Plant
pH and Temperature Data August 2010 through August 2014

Month	Day	pH	temperature
13-Nov	30		
13-Dec	1		
	2	6.6	6
	3	7.3	9
	4	7.6	11
	5	7.9	12
	6	7.7	12
	7		
	8		
	9		
	10		
	11	6.8	11
	12	8	9
	13	7.5	9
	14		
	15		
	16	7.8	8
	17	7.5	10
	18	7.4	9
	19	7.3	9
	20	7.2	9
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
14-Jan	1		
	2	7.8	8
	3		
	4		
	5		
	6	7.9	8
	7	7.7	6
	8	7.6	7
	9	7.6	7
	10	7.5	6
	11		
	12		
	13	7.4	6
	14	6.7	9
	15	7.7	8
	16	7.8	9
	17	7.6	9
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		

Month	Day	pH	temperature
14-Jan	27	7.9	8
	28	7.5	7
	29		
	30	7..7	6
	31	7.5	6
14-Feb	1		
	2		
	3	7.1	7
	4	7.9	7
	5	7.1	8
	6	6.6	8
	7	6.8	8
	8		
	9		
	10	6.4	6
	11	7	6
	12	7.3	7
	13		
	14		
	15		
	16		
	17	7.5	5
	18	7.1	7
	19	6.9	8
	20	7.2	8
	21	7.1	8
	22		
	23		
	24	6.4	8
	25	7.2	7
	26	7.1	9
	27	6.8	9
	28	6.9	9
14-Mar	1		
	2		
	3		
	4		
	5		
	6	6.3	6
	7	6.6	6
	8		
	9		
	10	6.1	8
	11	7.1	8
	12	6.8	9
	13	6.7	8
	14	6.8	9
	15		
	16		
	17		
	18	6.6	5
	19	6.4	8
	20	6.6	7
	21	6.7	7
	22		
	23		
	24	6.3	6
	25	6.6	8

Month	Day	pH	temperature
14-Mar	26	6.3	9
	27	6.9	8
	28	6.8	8
	29		
	30		
	31		
14-Apr	1		
	2		
	3		
	4		
	5		
	6		
	7	6.3	9
	8	7.4	11
	9	7.6	11
	10	7.2	12
	11	7.1	12
	12		
	13		
	14	7.6	13
	15	6.5	13
	16	6.7	12
	17	7.4	12
	18	7.3	12
	19		
	20		
	21	6.1	12
	22	7.1	13
	23	6.5	14
	24	6.9	14
	25	6.9	14
	26		
	27		
	28	7.3	13
	29	7.4	13
	30	7.4	13
14-May	1	7.8	14
	2	7.5	14
	3		
	4		
	5	7.7	14
	6	7	15
	7	7.3	16
	8	6.9	17
	9	7.1	17
	10		
	11		
	12	7.7	18
	13	7.3	18
	14	7.3	18
	15	6.9	19
	16	7.1	19
	17		
	18		
	19	6.1	16
	20	7.3	17
	21	6.9	18
	22	6.7	19

Attachment 5

Lightfoot Elementary School Wastewater Treatment Plant
pH and Temperature Data August 2010 through August 2014

Month	Day	pH	temperature
14-May	23	6.9	18
	24		
	25		
	26		
	27	7.3	19
	28	7.7	20
	29	7.8	19
	30	7.2	19
	31		
14-Jun	1		
	2	7.4	18
	3	7.1	19
	4	6.9	20
	5	6.9	20
	6	7.5	20
	7		
	8		
	9	7.3	20
	10	7.2	20
	11	6.8	21
	12	6.6	20
	13	6.8	20
	14		
	15		
	16	7.8	20
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
14-Jul	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		

Month	Day	pH	temperature
14-Jul	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
14-Aug	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		

90th Percentile pH = 7.8 SU

90th Percentile Temperature = 21°C

Attachment 5

FACILITY: Lightfoot Elementary S/
VPDES #: VA0062961

Ammonia Calculation - Acute Ammonia Criteria for Freshwater

TIER INFORMATION: NONE

	Temperature	pH
DATA ENTRY:->	21	7.80

FT
FT=10^((.03)(20-T) = 0.9332543

FPH
FPH=1 if 8.0<=pH<=9.0 = NA
FPH=((1+10^(7.4-pH))/1.25 if 6.5<=pH<8.0 = 1.1184857
FPH= 1.1184857364428

Acute Criteria Concentration=.52/FT/FPH/2 = 0.2490823

Conversion from un-ionized to Total Ammonia can be calculated by using the following formulas:
Total Acute Ammonia Criteria = Calculated un-ionized ammonia criteria divided by fraction of un-ionized Ammonia
Where: Fraction of un-ionized ammonia = 1/(10^(pKa-pH) +1) Fraction= 0.0262505
where: pKa = 0.09018 + (2729.92/273.2 + temperature 'C,) pKa = 9.3693098
Total Acute Ammonia Criteria = Calculated un-ionized Ammonia Criteria divided by fraction of un-ionized Ammonia
Total Acute Ammonia Criteria = 0.2490823 / 0.0262504896 = Total Ammonia = 9.4886732

Total Ammonia is then converted to Ammonia-Nitrogen.
TOTAL ACUTE N-NH3 9.4886732 X .822 7.8186667 MG/L = 7.82

Ammonia Calculation - Chronic Ammonia Criteria for Freshwater

TIER INFORMATION:

	Temperature	pH
DATA ENTRY:->	21	7.80

FT
FT=10^((.03)(20-T) = 0.9332543

FPH
FPH=1 if 8.0<=pH<=9.0 = NA
FPH=((1+10^(7.4-pH))/1.25 if 6.5<=pH<8.0 = 1.1184857
FPH= 1.1184857364428

Ratio
Ratio = 13.5 if 7.7<=pH<=9.0 = 13.5
Ratio = 20.25 x (10^(7.7-pH))/(1+(10^(7.4-pH)) if 6.5<=pH<7.7 = NA
Ratio = 13.5

Chronic Criteria Concentration=.8/FT/FPH/RATIO = 0.0567709

Conversion from un-ionized to Total Ammonia can be calculated by using the following formulas:
Total Acute Ammonia Criteria = Calculated un-ionized ammonia criteria divided by fraction of un-ionized Ammonia
Where: Fraction of un-ionized ammonia = 1/(10^(pKa-pH) +1) Fraction= 0.0262505
where: pKa = 0.09018 + (2729.92/273.2 + temperature 'C) pKa = 9.3693098
Total Acute Ammonia Criteria=Calculated un-ionized Ammonia Criteria divided by fraction of un-ionized Ammonia
Total Acute Ammonia Criteria = 0.0567709 / 0.0262505 = Total Ammonia = 2.16266056

Total Ammonia is then converted to Ammonia-Nitrogen.
TOTAL CHRONIC N-NH3 2.1626606 X .822 1.7820323 MG/L = 1.78

Revised 12/03/97: (I:\wdbr1\common\permits\models\newamm)

1999 Ammonia Criteria

Analysis of the Lightf. c Elementary School STP e. .uent data for Ammonia
Averaging period for standard = 30 days

The statistics for Ammonia are:

Number of values	= 1
Quantification level	= .2
Number < quantification	= 0
Expected value	= 10
Variance	= 36.00001
C.V.	= .6
97th percentile	= 24.33418
Statistics used	= Reasonable potential assumptions - Type 2 data

The WLAs for Ammonia are:

Acute WLA	= 7.82
Chronic WLA	= ----
Human Health WLA	= ----

Limits are based on acute toxicity and 1 samples/month, 1 samples/week

Maximum daily limit	= 7.82
Average weekly limit	= 7.819999
Average monthly limit	= 7.819999

Note: The maximum daily limit applies to industrial dischargers
The average weekly limit applies to POTWs
The average monthly limit applies to both.

The Data are
10

The final effluent limitations will be established as 7.81999 mg/l Weekly Average which equals 7.8 mg/l and 7.81999 mg/l Monthly Average which equals 7.8 mg/l.

1999 Ammonia as N Limit

10/9/2014 2:49:25 PM

Facility = Lightfoot Elementary School WWTP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 12.1
WLAc =
Q.L. = .2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 12.1
Average Weekly limit = 12.1
Average Monthly LImit = 12.1

The data are:

9

5/22/2009 3:51:58 PM

Facility = Lightfoot Elementary School
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 19
WLAc = 11
Q.L. = 100
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average= 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 16.0883226245855
Average Weekly limit = 9.59676626920107
Average Monthly LImit = 7.9737131838758

The data are:

200

Attachment 8

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Orange County, Virginia.

PUBLIC COMMENT PERIOD: February 12, 2015 to March 16, 2015

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Orange County School Board, 200 Dailey Drive, Orange, VA 22960, VA0062961

NAME AND ADDRESS OF FACILITY: Lightfoot Elementary School Wastewater Treatment Plant, 11360 Zachary Taylor Highway, Unionville, VA 22567

PROJECT DESCRIPTION: Orange County School Board has applied for a reissuance of a permit for the public Lightfoot Elementary School Wastewater Treatment Plant. The applicant proposes to release treated sewage wastewaters from a public school at a rate of 0.004 million gallons per day into a water body. The sludge will be disposed by transporting it to Massaponax Wastewater Treatment Plant (VA0025658) for final disposal. The facility proposes to release the treated sewage in the Riga Run, UT in Orange County in the York River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, $cBOD_5$, Total Residual Chlorine, Total Suspended Solids, Ammonia as N, *E.coli*, and Dissolved Oxygen.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Joan C. Crowther
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3925 E-mail: joan.crowther@deq.virginia.gov Fax: (703) 583-3821